UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,417	06/19/2003	David Alan Burton	Pillar 711	7009

7590	05/26/2006

Robert Moll
1173 St. Charles Court
Los Altos, CA 94024

EXAMINER
WALTER, CRAIG E

ART UNIT	PAPER NUMBER
2188	

DATE MAILED: 05/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/600,417	BURTON ET AL.
	Examiner	Art Unit	
	Craig E. Walter	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _10 April 2006_.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-32_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☒ Claim(s) _14-16,26 and 27_ is/are allowed.

6) ☒ Claim(s) _1-7,12,17,19,22-24 and 28-32_ is/are rejected.

7) ☒ Claim(s) _8-11,13,18,20,21 and 25_ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _10 April 2006_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1.   Claims 1, 6, 16, and 25 have been amended.

Claims 1-32 are pending in the application.

Claims 1-7, 12, 17, 19, 22-24, and 28-32 are rejected.

Claims 8-11, 13, 18, 20-21, and 25 are objected to.

Claims 14-16, and 26-27 are allowed.

Continued Examination Under 37 CFR 1.114

2.   A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10 April 2006 has been entered.

Response to Amendment

3.   Applicant's amendments filed on 10 April 2006 in response to the action mailed on 6 February 2006 have been fully considered, and have necessitated new grounds of rejections. Justification for providing Applicant with the new grounds of rejection is specifically addressed in the section titled "Response to Arguments" in this correspondence.

Claim Objections

4.   Claim 25 is objected to because of the following informalities:

Examiner respectfully suggests Applicant change the phrase "identifying

the original data is dirty in cache memory, destaging the original data" to

"indicating that the original data is dirty in the cache memory, then destaging the

original data" and the phrase "inverse value in the bit position representing the

presence of the original data" to "inverse value in the bit position indicating the

presence of the original data" in lines 6-7 and 8-9 respectively for clarity and

consistency.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5.   Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply

with the written description requirement. The claim(s) contains subject matter which

was not described in the specification in such a way as to reasonably convey to one

skilled in the relevant art that the inventor(s), at the time the application was filed, had

possession of the claimed invention.

As for claim 1, Applicant has amended the preamble of the claim to further limit the scope by reciting the limitation "...wherein the first and second snapshots persist concurrently", and the limitation "wherein the first and second metadata locate an original data element of the first snapshot data and of the second snapshot data at the same address of the target VLUN" (the latter limitation was amended during the previous response by Applicant). As the Examiner understands these limitations, as considered in entirety with the remaining limitations of the claim, there is no support in the specification for these teachings, that would reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. More specifically, the Examiner cannot find support in the specification that would convey to one skilled in the art how an original data element of a first and second snapshot could be stored at the *same address* of a target LUN while both first and second snapshots persist *concurrently*. In other words, in order for them to be stored concurrently they must be stored in unique locations, and hence cannot be at the same address. If an original data element of both snapshots is located at the same address, both snapshots cannot coexist, as one must be overwritten. In summary, there is no support in the specification to support a scenario that meets both these limitations simultaneously.

Claims 2-5 are further rejected for inheriting the deficiencies of claim 1.

6.   Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply

with the enablement requirement. The claim(s) contains subject matter which was not

described in the specification in such a way as to enable one skilled in the art to which it

pertains, or with which it is most nearly connected, to make and/or use the invention.

As for claim 1, Applicant has amended the preamble of the claim to further

limit the scope by reciting the limitation "...wherein the first and second

snapshots persist concurrently", and the limitation "wherein the first and second

metadata locate an original data element of the first snapshot data and of the

second snapshot data at the same address of the target VLUN" (the latter

limitation was amended during the previous response by Applicant). As the

Examiner understands these limitations, as considered in entirety with the

remaining limitations of the claim, one skilled in the art would not be sufficiently

enabled to make and/or use the invention as recited, consistent with the

specification. More specifically, it would be unclear to one skilled in the art how

an original data element of a first and second snapshot could be stored at the

same address of a target LUN while both first and second snapshots persist

concurrently. In other words, in order for them to be stored concurrently they

must be stored in unique locations, and hence cannot be at the same address. If

an original data element of both snapshots is located at the same address, both

snapshots cannot coexist, as one must be overwritten. Further, there is no

support in the specification, which would enable one skilled in the art to

determine how both of these mutually exclusive events could occur.

Claims 2-5 are further rejected for inheriting the deficiencies of claim 1.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly
claiming the subject matter which the applicant regards as his invention.

7.   Claims 22-24 and 28-32 are rejected under 35 U.S.C. 112, second paragraph, as

being indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention.

Claims 22 and 30-32 recite the limitation "the original data" in lines 7, 6, and 6

respectively. There is insufficient antecedent basis for these limitations in the claim, as

"original data" is not previously set forth within the claim.

Claims 28-29 recite the limitation "the first snapshot data" in line 6 of these

claims. There is insufficient antecedent basis for this limitation in the claim, as "first

snapshot data" is not previously set forth within the claim.

Claims 23-24 are further rejected for inheriting the deficiencies of claim 22.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set
forth in section 102 of this title, if the differences between the subject matter sought to be patented and
the prior art are such that the subject matter as a whole would have been obvious at the time the
invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negatived by the manner in which the invention was made.

8.   Claims 1, 2, 4, 6, 7, 12, 17 and 19 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Armangau in further view of Cochran et al., hereinafter Cochran (US

PG Publication 2004/0024961 A1), in further view of Fujibayashi (US PG Publication

2003/0131278 A1).

As for claim 1, Armangau discloses a method of snapshot operation for a data

storage system with a first host (Fig. 2, element 31) that communicates with a cache

memory (Fig. 2, element 47 the cache memory is contained within the storage

subsystem—see col. 8, lines 53-57), a source VLUN containing source data (Fig. 5,

element 101), and a target VLUN (Fig. 5, element 103), comprising:

generating first metadata to locate first snapshot data and to

indicate when the first snapshot data is in the target VLUN (pointers (Fig. 5, element

106) are used to reference tracks in the snapshot volumes that contain the original

data of the snapshot, col. 13, line 66 through col. 14 line 3); and

generating second metadata to locate second snapshot data and to

indicate when the second snapshot data is in the target VLUN (the index (Fig. 5,

element 111) acts as a translation table to indicate which track number of the

production volume R corresponds the track number of the snapshot volume x-- col. 14,

lines 43-45), wherein the first and second metadata locate the same data in the target

VLUN (the index and pointers refer to the same data in snapshot volume x—col. 14,

lines 35-45; the index can also refer to the pointers themselves which are pointing to

data located in snapshot volume x). Alternatively, since each of the pointers contained

in the list (Fig. 5, element 106) refer to a unique snapshotted production volume extent

(track), each pointer within the list is a unique metadata referring to each snapshot (col.

13, line 67 through col. 14 line 7).

Despite these teachings, Armangau fails to disclose the first and second metadata as locating *an original data element of the first snapshot data and of the second snapshot data at the same address* in the target VLUN as recited by Applicant in amended claim 1.

Cochran however teaches a full logical-unit copy with a transient snapshot copy like intermediate stage, in which elements within a Primary LUN are maintained and updated in a Copy LUN as modifications (i.e. write operations) are performed on the Primary LUN. Referring to Figs. 10A-G of his disclosure, Cochran discusses creating a copy (i.e. snapshot copy) of several (three in this example) of the data elements in the Primary LUN (Fig. 10B, element 1002), and storing the copied data into a Copy LUN (Fig. 10B, element 1004) – Paragraph 0042, lines 1-18. Modifications are made (i.e. by a write operation) to one of those three elements in the Primary LUN (referring to Fig. 10C, data element "Z" is being written to the second location of the Primary LUN), at which at a later time the data element "Z" is written to the Copy LUN to maintain consistency with the Primary LUN (Fig. 10D, element "Z" is written to the second location of the Copy LUN). After the second copy operation has been performed, an original data element (i.e. element "X" in the first location of the Primary LUN) is still located in the first location of the Copy LUN. In other words, the original data element is at the same address at the time of both the first and second copy operations as recited by Applicant in claim 1. Note Cochran specifically uses the letter "X" to denote data *originally* presented in the Primary LUN (paragraph 0038, lines 15-18).

It would have been obvious to one of ordinary skill in the art at the time of the

invention for Armangau to include Cochran's system of LUN snapshot copy operation

into his own snapshot copy facility storage system. Armangau system would benefit

from the use Cochran's Primary LUN and Copy LUN for snapshot operation, as it

would allow him to maintain snapshots of only data that has been modified from the

original data set, rather than simply appending each snapshot to the snapshot volume

as presently taught by Armangau. By doing so, Armangau would not only be making

more efficient use of memory (by storing only changes rather than the entire data set),

he would also have a more efficient LUN copy operation which is extremely important

to mass-storage systems as taught by Cochran in paragraph 0015, lines 1-19.

Additionally, Armangau fails to teach "preserving first snapshot data of the

source data at an instant in time and second snapshot data of the source data at a

later instant in time, wherein the first and second snapshots persist concurrently as

recited by Applicant.

Fujibayashi however teaches an apparatus and method for multiple generation

remote backup and fast restore which includes primary and secondary storage areas

(Fig. 1 elements 125 and 155 respectively). The latter stores successive snapshots of

data concurrently to ensure that each coexist with each other on the secondary storage

volume (paragraph 0019, all lines).

It would have been obvious to one of ordinary skill in the art for Armangau to

further include Fujibayashi's remote backup and fast restore apparatus into his own

system. By doing so, Armangau would benefit by having a system to enable a user to

restore data more quickly by exploiting the benefits of local snapshot storage as taught

by Fujibayashi in paragraphs 0005 and 0011 respectively.

As for claim 2, Armangau in further view of Cochran discloses the method

of claim 1, wherein generating the first metadata includes generating a first log file

pointer to locate *the original data element* in the target VLUN (pointers (Fig. 5, element

106) are used to reference tracks in the snapshot volumes that contain the original

data of the snapshot, col. 13, lines 66 through col. 14 lines 3). The combination of

Armangau and Cochran would allow for Armangau's pointers to point to the original

data stored in the Cochran's Copy LUN.

As for claim 4, Armangau in further view of Cochran discloses the method

of claim 1, wherein generating the second metadata includes generating a second log

file pointer to locate *the original data element* in the target VLUN. Referring to Fig. 5,

the pointers referencing the data stored in snapshot volume x are contained in a list

(element 106). The combination of Armangau and Cochran would allow for

Armangau's pointers to point to the original data stored in the Cochran's Copy LUN.

Again, it would have been obvious to one of ordinary skill in the art at the

time of the invention for Armangau to include Cochran's system of system of LUN

snapshot copy operation into his own snapshot copy facility storage system.

Armangau system would benefit from the use Cochran's Primary LUN and Copy LUN

for snapshot operation, as it would allow him to maintain snapshots of only data that

has been modified from the original data set, rather than simply appending each

snapshot to the snapshot volume as presently taught by Armangau. By doing so,

Armangau would not only be making more efficient use of memory (by storing only

changes rather than the entire data set), he would also have a more efficient LUN copy

operation which is extremely important to mass-storage systems as taught by Cochran

in paragraph 0015, lines 1-19.

As for claim 6, Armangau teaches a snapshot system for a data storage

system including a first host that communicates with a cache memory, a source VLUN,

a target VLUN, and metadata, comprising:

a source VLUN for active data (production volume R);

a target VLUN to store migrated snapshot data (snapshot volume x);

first metadata to indicate when and to locate where the first snapshot data

is in the target VLUN (pointers are used to point to the tracks in the snapshot volume

that contain the original data of the snapshot (col.13, line 67 through col. 14 line 3). It

is worthy to note that Armangau's system further includes a list of free track pointers

(Fig. 5, element 109), which can be used to determine when data has been stored in

the snapshot volume by removing the pointer from the list of pointers pointing to free

tracks (col. 14, lines 3-7);

and second metadata to indicate when and to locate where second

snapshot data of the active data is in the target VLUN wherein the first metadata and

the second metadata to indicate and locate the same snapshot data in the target VLUN

wherein the snapshot system preserves the active data of the first snapshot while

taking the second snapshot (again, the index (Fig. 5, element 111)) is used translate

the production volume track number to the corresponding snapshot volume number.

Armangau's index can therefore be further used to determine when snapshot data is in

the snapshot volume by checking the table to see if one or many of the production

tracks correspond to the snapshot tracks. It is worthy to note that the second snapshot

only destroys the data that has changed once the snapshot is complete, rather than

while in process as claimed. The limitation of the claim recites "preserv[ing] ...while

taking the second snapshot" not preserving upon completion of the second snapshot.

In other words, the second snapshot only destroys the data that has changed once the

snapshot is *complete*, rather than while *in process* as claimed by Applicant (emphasis

added.

Despite these teachings, Armangau fails to disclose the first and second

metadata as indicating and locating a *data element common to the first and second*

snapshot data in the target VLUN.

Cochran however teaches a full logical-unit copy with a transient snapshot copy

like intermediate stage, in which elements within a Primary LUN are maintained and

updated in a Copy LUN as modifications (i.e. write operations) are performed on the

Primary LUN. Referring to Figs. 10A-G of his disclosure, Cochran discusses creating a

copy (i.e. snapshot copy) of several (three in this example) of the data elements in the

Primary LUN (Fig. 10B, element 1002), and storing the copied data into a Copy LUN

(Fig. 10B, element 1004) – Paragraph 0042, lines 1-18. Modifications are made (i.e.

by a write operation) to one of those three elements in the Primary LUN (referring to

Fig. 10C, data element "Z" is being written to the second location of the Primary LUN),

at which at a later time the data element "Z" is written to the Copy LUN to maintain

consistency with the Primary LUN (Fig. 10D, element "Z" is written to the second location of the Copy LUN). After the second copy operation has been performed, an original data element (i.e. element "X" in the first location of the Primary LUN) is still located in the first location of the Copy LUN. In other words, the original data element is at the same address at the time of both the first and second copy operations as recited by Applicant in claim 1. Note Cochran specifically uses the letter "X" to denote data originally presented in the Primary LUN (paragraph 0038, lines 15-18).

It would have been obvious to one of ordinary skill in the art at the time of the invention for Armangau to include Cochran's system of system of LUN snapshot copy operation into his own snapshot copy facility storage system. Armangau system would benefit from the use Cochran's Primary LUN and Copy LUN for snapshot operation, as it would allow him to maintain snapshots of only data that has been modified from the original data set, rather than simply appending each snapshot to the snapshot volume as presently taught by Armangau. By doing so, Armangau would not only be making more efficient use of memory (by storing only changes rather than the entire data set), he would also have a more efficient LUN copy operation which is extremely important to mass-storage systems as taught by Cochran in paragraph 0015, lines 1-19.

As for claim 7, Armangau teaches the snapshot system of claim 6, wherein the first metadata includes a first log file pointer to locate the first snapshot data in the target VLUN and the second metadata includes a second log file pointer to locate the second snapshot data in the target VLUN. Just as with claim 4, each pointer

in the list points to a different track in snapshot volume x, therefore each pointer itself is

a unique metadata.

As for claim 12, Armangau teaches the snapshot system of claim 6,

wherein the first metadata indicates that the original data of the first snapshot is in the

target VLUN and the second metadata indicates that the original data of the second

snapshot is in the source VLUN (each pointer points to the track location on the

snapshot volume indicating where the original data is located (col.13, line 67 through

col. 14 line 3)).

As for claim 17, Armangau teaches a method of snapshot operation in a

data storage system in a first host that communicates with a cache memory, a source

VLUN, a target VLUN, first metadata, and second metadata, comprising:

receiving requests from an application to modify data in the cache memory

(col. 7, lines 1-6 the host requests modification of data in the primary storage area

(cache) within the primary storage subsystem);

writing the modified data to the cache memory (modified data can be

written once the remote copy flag is inspected by the primary storage subsystem – col.

7, lines 5-11);

destaging the original data to the target VLUN to preserve the original data

of a first snapshot and a second snapshot (col. 7, lines 18-25 the data is copied from

the primary storage area to a different set of primary storage locations (target VLUN));

and updating the first and second metadata to locate the original data in

the target VLUN (the list of pointers as referenced in col. 7 lines 18-20 are used to

locate data of both old and new versions of the storage units).

Despite these teachings, Armangau fails to disclose the first and second

metadata locating the original data element *common to the first and second snapshot*

data in the target VLUN.

Cochran however teaches a full logical-unit copy with a transient snapshot copy

like intermediate stage, in which elements within a Primary LUN are maintained and

updated in a Copy LUN as modifications (i.e. write operations) are performed on the

Primary LUN. Referring to Figs. 10A-G of his disclosure, Cochran discusses creating a

copy (i.e. snapshot copy) of several (three in this example) of the data elements in the

Primary LUN (Fig. 10B, element 1002), and storing the copied data into a Copy LUN

(Fig. 10B, element 1004) – Paragraph 0042, lines 1-18. Modifications are made (i.e.

by a write operation) to one of those three elements in the Primary LUN (referring to

Fig. 10C, data element "Z" is being written to the second location of the Primary LUN),

at which at a later time the data element "Z" is written to the Copy LUN to maintain

consistency with the Primary LUN (Fig. 10D, element "Z" is written to the second

location of the Copy LUN). After the second copy operation has been performed, an

original data element (i.e. element "X" in the first location of the Primary LUN) is still

located in the first location of the Copy LUN. In other words, the original data element

is at the same address at the time of both the first and second copy operations as

recited by Applicant in claim 1. Note Cochran specifically uses the letter "X" to denote

data *originally* presented in the Primary LUN (paragraph 0038, lines 15-18).

It would have been obvious to one of ordinary skill in the art at the time of the

invention for Armangau to include Cochran's system of system of LUN snapshot copy

operation into his own snapshot copy facility storage system. Armangau system would

benefit from the use Cochran's Primary LUN and Copy LUN for snapshot operation, as

it would allow him to maintain snapshots of only data that has been modified from the

original data set, rather than simply appending each snapshot to the snapshot volume

as presently taught by Armangau. By doing so, Armangau would not only be making

more efficient use of memory (by storing only changes rather than the entire data set),

he would also have a more efficient LUN copy operation which is extremely important

to mass-storage systems as taught by Cochran in paragraph 0015, lines 1-19.

As for claim 19, Armangau teaches the method of claim 17, further

comprising updating the first and second metadata to indicate the presence of the

destaged original data in the target VLUN (again a pointer for each snapshotted track

is used to locate the original data of the snapshot (col. 13 line 67 through col. 14 line

3)).

Allowable Subject Matter

9.   Claims 14-16 and 26-27 are allowed.

10.   Claims 8-11, 13, 18, and 20-21 are objected to as being dependent upon a

rejected base claim, but would be allowable if rewritten in independent form including all

of the limitations of the base claim and any intervening claims.

11.   Claim 25 would be allowable if rewritten to overcome the objections set forth

under section 4 of this correspondence.

12.   The allowability of claims 22, and 28-32 is withdrawn in light of the rejections

under section 112 of the statute. These claims would be allowable however if rewritten

to overcome the rejections set forth in section 7 of this correspondence. Additionally,

claims 23 and 24 (which depend directly on claim 22) would be allowable if the rejection

of claim 22 is overcome.

Response to Arguments

13.   With respect to Applicant's discussion on page 16, lines 5-6 of the "Remarks"

document, the arguments with respect to claim 1 are rendered moot, as applicant has

amended this claim, which necessitated a new grounds of rejection.

14.   The Examiner fully considered Applicant's argument on page 16, lines 8-10, with

respect to the allowability of claim 6, however this argument is found to be not

persuasive. More specifically, the newly amended claim recites "wherein the snapshot

system preserves the active data of the first snapshot while taking the second

snapshot". According to Cochran's teachings, the snapshot occurs by identifying the

changes in the primary LUN and overwriting the applicable portions of the copy LUN

(i.e. partially overwriting the first snapshot) to *complete* the snapshot operation

(emphasis added) – See Fig. 10B, 10D.   The limitation of the claim recites

"preserv[ing] …while taking the second snapshot" not preserving upon completion of the

second snapshot. In other words, the second snapshot only destroys the data that has

changed once the snapshot is *complete*, rather than while *in process* as claimed by

Applicant (emphasis added). It is worthy to note that Applicant argues that claim 6 is

allowable for the same reasons as claim 1, however the limitation set forth in claim 1

(storing two full snapshots concurrently) is not commensurate in scope with the

limitation of this claim per the discussion *supra*.

15.   The Examiner fully considered Applicant's argument on page 16, lines 8-10, with

respect to the allowability of claim 17, however this argument is found to be not

persuasive. This claim recites "preserv[ing] the original data element of a first snapshot

and a second snapshot". Cochran meets this claim limitation, as only (at least) one

element needs to be preserved rather than preserving both of snapshots in entirety. It

is worthy to note that Applicant argues that claim 17 is allowable for the same reasons

as claim 1, however the limitation set forth in claim 1 (storing two full snapshots

concurrently) is not commensurate in scope with the limitation of this claim per the

discussion *supra*.

16.   The remaining arguments (with respect to allowability based on dependency on

allowable claims) have been addressed in sections 9-12 of this correspondence.

Conclusion

17.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Craig E. Walter whose telephone number is (571) 272-

8154. The examiner can normally be reached on 8:30a - 5:00p M-F.

18.   If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mano Padmanabhan can be reached on (571) 272-4210. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

19.   Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Craig E Walter
Examiner
Art Unit 2188

CEW

MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER